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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/538,941	03/31/2000	Hans-Detlef Luginsland	PM 258030/99003250	9776

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EXAMINER

LEE, RIP A

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/538,941

Applicant(s)

LUGINSLAND, HANS-DETLEF

Examiner

Rip A. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5 and 7-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,7,9,11-16 and 18-22 is/are rejected.
- 7) ☒ Claim(s) 4, 8,10 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

This office action follows a response filed on October 14, 2003. Applicants have amended claims 1, 5, 7, 8, 15, 21, and 22. In particular, claims now limit the structure of the organosilane to having $R^1 = \text{EtO}$, $R^2 = R^3 = \text{Me}$, and $R^4 = \text{C}_{3-18}$ divalent hydrocarbon.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The meaning of the term "solution styrene/butadiene" is not entirely clear. S/B polymer may be prepared by solution polymerization or emulsion polymerization methods, and the claims need to be amended to reflect this fact. The general term "solution styrene/butadiene copolymers" may represent emulsion polymerized S/B because the resulting polymer does exist in a solution. Furthermore, use of "styrene/butadiene copolymers" does not necessarily imply a copolymer. One may interpret this vague term as "styrene copolymers or butadiene copolymers." Use of the term "solution polymerized styrene-butadiene copolymer" is strongly suggested.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1, 3, 9, 11-15, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,834,536 to Scholl in view of U.S. Patent No. 5,650,457 to Scholl *et al.*

Scholl teaches a rubber composition comprised of styrene-butadiene copolymer (col. 4, lines 30-36), filler such as silicic acid, natural and synthetic silicates, carbon black, and aluminum oxide (col. 3, lines 15-36), and organosilane compounds. Specifically, the latter has general formula $R^1R^2R^3Si-X-(Hal)_n$, as shown in column 2, line 15. The compound 3-chloropropyldimethylethoxysilane is exemplary (col. 2, lines 44 and 45). Rubber compositions of the invention contain 0.3-40 parts by weight of silane containing sulfur (col. 5, line 23) or 0.1-200 wt % of silane immobilized on carrier (claim 3). The patent also described a process for

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making this composition. Manufactured goods containing the rubber composition include molded products such as tires.

Scholl does not discuss the type of styrene butadiene copolymer that is to be used in the invention. One having ordinary skill in the tire art would realize that styrene-butadiene copolymer may be prepared either by solution polymerization or by emulsion polymerization. In fact, Scholl *et al.* shows that rubber compositions for tires are preferably made from styrene-butadiene prepared by solution polymerization (col. 4, line 34). Therefore, it would have been obvious to one having ordinary skill in the art to use solution polymerized styrene-butadiene copolymer in the composition of Scholl because this material is disclosed specifically in the prior art.

Regarding claims 13 and 20, although Scholl does not recite the term "tire tread" specifically, one having ordinary skill in the tire art would have found it obvious to make a tire tread from the rubber composition described therein, especially in light of the fact that the goal of the invention is to produce a rubber mixture for tires having low rolling resistance (col. 1, line 12). This implies that a tire tread, as opposed to an inner liner, tire cord, or valve stem, or side wall, is to be made.

6. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,489,701 to Childress *et al.*

Childress *et al.* teaches a process for making 3,3'-bis(dimethylethoxysilylpropyl) polysulfides (col. 4, line 9) and 4,4'-bis(dimethylethoxysilylpropyl)polysulfides (col. 4, line 18). Compounds containing a tetrasulfide bridge are shown throughout the reference; therefore, one having ordinary skill in the art would have found it obvious to make the compounds, 3,3'-

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bis(dimethylethoxysilylpropyl)tetrasulfide and 4,4'-*bis*(dimethylethoxysilylpropyl)tetrasulfide.

Also, the skilled artisan would have found it obvious to use these compounds as coupling agent in the manufacture of low rolling resistance tires because this is the goal of the invention (col. 1, line 30). Therefore, it would have been obvious to one having ordinary skill in the art to arrive at the subject matter of claim 21 because such compounds are taught and because their use is contemplated in the reference. Although the term "tire tread" is not stated specifically, the skilled artisan would have found it obvious that "rolling resistance" implies that a tire tread, as opposed to an inner liner, tire cord, or valve stem, or side wall, is to be made.

7. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Childress *et al.* in view of Scholl.

Childress *et al.* teaches use of 3,3'-*bis*(dimethylethoxysilylpropyl) polysulfides and 4,4'-*bis*(dimethylethoxysilylpropyl)polysulfides in rubber mixtures for tires, but it does not teach mixing organosilane with carrier. Use of reinforcing filler (carrier) in tires is routine practice in the art, and the skilled artisan would have found it obvious to turn to Scholl to see that silica and carbon black are typically used (col. 3, lines 15-36). Furthermore, the patent teaches immobilization of organosilane on the carrier (claim 3). Therefore, it would have been obvious to one having ordinary skill in the art to arrive at the subject matter of present claim 22 because such an embodiment is gleaned from the teachings of the prior art.

8. Claims 1, 3, 5, 7, 9, 11-16, and 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,489,389 to Ohta *et al.* in view of Childress *et al.*

The discussion of the disclosures of the prior art of Childress *et al.* from paragraph 6 of this office action is incorporated here by reference.

Ohta *et al.* teaches rubber compositions containing a styrene-butadiene rubber component which is prepared by solution polymerization (col. 3, line 55). These compositions are useful in the manufacture of tire treads (col. 9, line 26). The composition comprises a silicate filler represented by formula (I), as shown in claim 1. Other filler include silica and carbon black (col. 2, lines 55 and 57). Coupling agents of general formula $Y_3-Si-C_nH_{2n}-A$, where Y is alkyl or alkoxy and where three Y's may be the same or different (col. 7, line 31), are used in an amount of 3-20 wt % (claim 16). The inventors do not recite the compounds presently claimed in their listing of examples.

Childress *et al.* teaches use of 3,3'-bis(dimethylethoxysilylpropyl) polysulfides and 4,4'-bis(dimethylethoxysilylpropyl) polysulfides as coupling agents for rubber compositions, and these compounds possess the structural requirements taught in Ohta *et al.* Absent any indication of novel or unexpected results by Ohta *et al.*, one having ordinary skill in the art would have found it obvious to use the compounds disclosed in Childress *et al.* as the coupling agent for rubber compositions. Since Ohta *et al.* indicate that all compounds having the desired structural features are suited for their invention, one having ordinary skill in the art would have expected such an embodiment to work. The combination is especially obvious since Ohta *et al.* exemplifies mixed alkyl- and alkoxy-substituted silanes such as $[(EtO)_2MeSiCH_2CH_2CH_2]_2S_4$, $(MeO)_2MeSiCH_2CH_2CH_2SH$, and $(MeO)_2MeSiCH_2CH_2CH_2Cl$ (col. 8, lines 13-16). It would

have been obvious to one having ordinary skill in the art to use the compounds in Childress *et al.* since these compounds differ only in the permutation of ethoxy and methyl groups.

Allowable Subject Matter

9. Claims 4, 8, 10, and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

10. The rejection of claims under 35 U.S.C. 102 in view of Scholl *et al.*, Zimmer *et al.*, and Ohta *et al.* have been overcome by amendment. The rejection of claims under 35 U.S.C. 103(a) in view of Wolff *et al.* and Scholl *et al.* has been withdrawn. In view of the amendment, it is deemed that the combined references do not fairly suggest the subject matter of the present invention.

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Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (571)273-1104.

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January 20, 2004



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